



## **RESEARCH DEPARTMENT**

### **THE SERVICE AREAS OF THE PETERBOROUGH TELEVISION AND V.H.F. SOUND TRANSMITTERS**

**Report No. K-154**

**( 1962/21 )**

**THE BRITISH BROADCASTING CORPORATION  
ENGINEERING DIVISION**

RESEARCH DEPARTMENT

THE SERVICE AREAS OF THE PETERBOROUGH TELEVISION  
AND V.H.F. SOUND TRANSMITTERS

Report No. K-154

( 1982/21 )

R.C. Vercoe  
T. Leyland

*W. Proctor Wilson*

(W. Proctor Wilson)

This Report is the property of the  
British Broadcasting Corporation and  
may not be reproduced in any form  
without the written permission of the  
Corporation.

THE SERVICE AREAS OF THE PETERBOROUGH TELEVISION  
AND V.H.F. SOUND TRANSMITTERS

Section	Title	Page
	SUMMARY . . . . .	1
1	GENERAL . . . . .	1
2	RESULTS AND DISCUSSION . . . . .	1
	2.1 Television . . . . .	1
	2.2 V.H.F. Sound . . . . .	3
3	CONCLUSIONS . . . . .	4
	APPENDIX . . . . .	5

## THE SERVICE AREAS OF THE PETERBOROUGH TELEVISION AND V.H.F. SOUND TRANSMITTERS

### SUMMARY

This report presents the results of field strength surveys of the Peterborough television and v.h.f. sound transmitters. In general the service areas of the Peterborough transmitters overlap those of adjacent transmitters but attention is drawn to certain towns and rural areas in which the service is inadequate.

### 1. GENERAL

The Peterborough television and v.h.f. sound transmitting station is situated on Morborne Hill, a site 184 ft (56 m) above mean sea level and 6 miles (9.5 km) south-west of Peterborough. The television transmission on Channel 5 (vision 66.75 Mc/s; sound 63.25 Mc/s) is horizontally polarized and is provided by a 0.5 kW transmitter (underrun at 0.39 kW) driving an aerial consisting of eight tiers, each of six radial unipoles mounted on a stayed mast 418 ft (127 m) above ground level. The aerial horizontal radiation pattern (h.r.p.) is omnidirectional and the effective radiated power (e.r.p.) is 1.1 kW.

The three v.h.f. sound transmissions on Band II are provided by three pairs of transmitters, each of 1 kW, driving a common sixteen-tier unipole-V aerial mounted 325 ft (99 m) above ground level. The minimum and maximum e.r.p.s are 1.0 and 21 kW respectively. A sketch of the h.r.p. is given in Fig. 2. The Light, Third and Home programme frequencies are 90.1 Mc/s, 92.3 Mc/s and 94.5 Mc/s respectively.

Both services started on 5th October 1959.

### 2. RESULTS AND DISCUSSION

#### 2.1. Television

The results of the television survey are presented in a field strength contour map (Fig. 1) and details of the field strength in towns and villages measured with a population of 2,000 or more are given in the Appendix.

The city of Peterborough, with a field strength of 5 mV/m, is very well served. The limit of the service area is determined by co-channel interference, the field strength protected for 90% of the time being as high as 0.7 mV/m in a south-westerly direction and approximately 0.3 mV/m in other directions. Two large towns

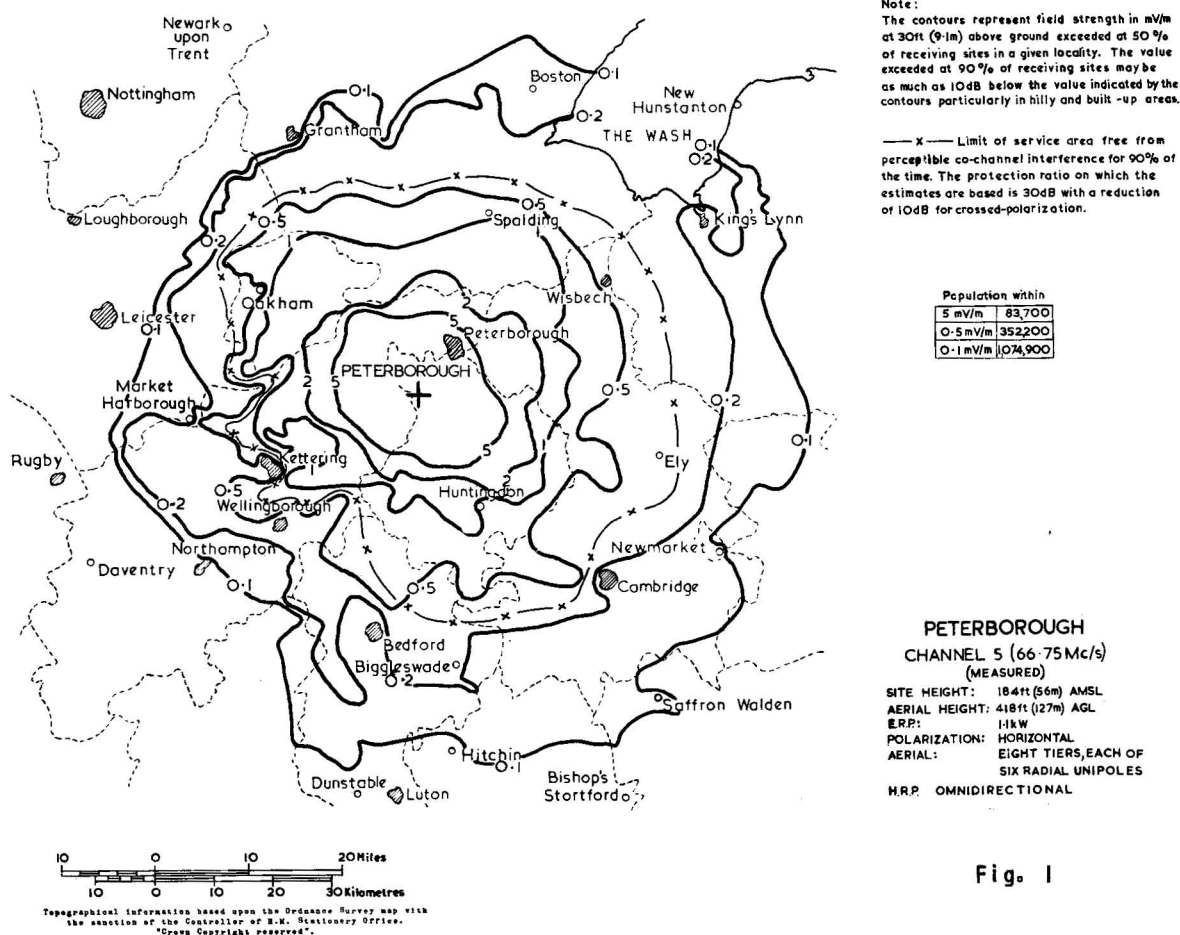


Fig. 1

to the south-west of the transmitter, Kettering (0.45 mV/m) and Wellingborough (0.8 mV/m), are therefore subject to this form of interference for more than 10% of the time. In a southerly direction, Cambridge and Bedford, with median field strength values of 0.18 mV/m and 0.12 mV/m respectively, are very poorly served and are subject to co-channel interference. The service in the south-east Lincolnshire area is also poor and, while the proposed Skegness transmitter will serve the town and its immediate environs, there will remain a large area in which the service is generally very poor. With the exceptions noted, the Peterborough television transmitter fills the gap between the service areas of the Crystal Palace, Sutton Coldfield, Holme Moss and Norwich transmitters.

The population within the 5.0 mV/m, 0.5 mV/m and 0.1 mV/m contours, estimated by Engineering Information Department, is given in Table 1.

TABLE 1

Field Strength (mV/m 30 ft (9.1 m) a.g.l.)	Population
5.0	83,700
0.5	352,200
0.1	1,074,900

## 2.2 V.H.F. Sound

The results of the v.h.f. sound survey are presented in a field strength contour map (Fig. 2) and details of the field strength in towns and villages measured with populations of 2,000 or more are given in the Appendix.

With fewer and less severe e.r.p. restrictions in Band II (by comparison with Band I), it is easier to fill the gaps in the service areas of the v.h.f. sound transmitters. The Peterborough v.h.f. sound transmitter goes a long way towards this and when the East Lincolnshire transmitter comes into service there will, with the exception of one or two isolated towns, be an adequate service between Peterborough and all geographically-adjacent transmitters. The exceptions are Cambridge and Grantham. Cambridge, with a median field strength of 0.55 mV/m and a 90% value of 0.25 mV/m, is a marginal case. Grantham receives a median value of about 0.25 mV/m from Holme Moss; the signal is subject to fading and the level is not adequate for a town of its size.

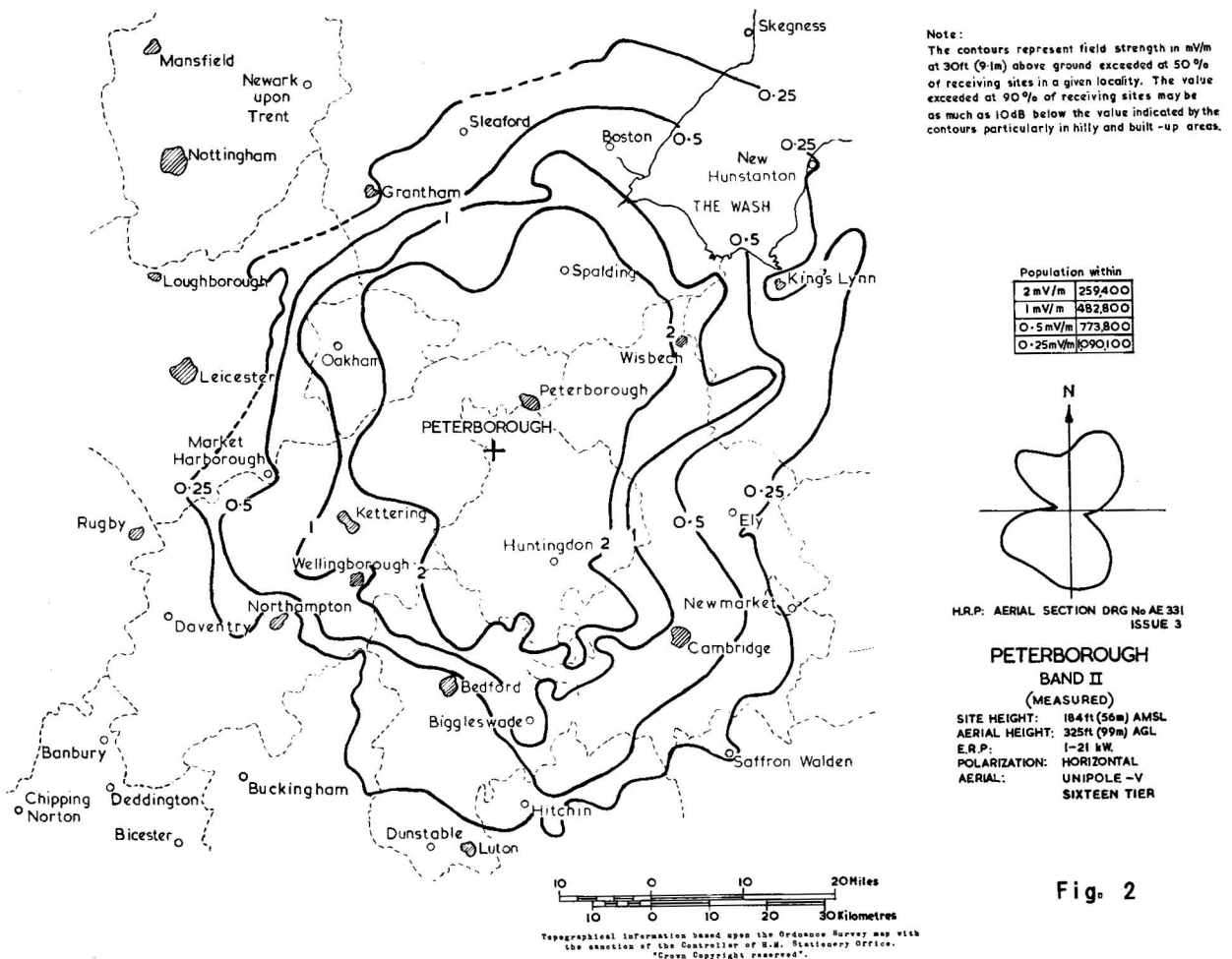


Fig. 2

The population within the 2.0 mV/m, 1.0 mV/m, 0.5 mV/m and 0.25 mV/m contours, estimated by Engineering Information Department, is given in Table 2.

TABLE 2

Field Strength (mV/m 30 ft (9.1 m) a.g.l.)	Population
2.0	259,400
1.0	482,800
0.5	773,800
0.25	1,090,100

### 3. CONCLUSIONS

With the exceptions noted, the Peterborough television and v.h.f. sound transmitters, together with the proposed East Lincolnshire v.h.f. transmitter, fill the gap between the service areas of the geographically-adjacent transmitters.

## APPENDIX

Field strength in mV/m at 30 ft (9.1 m) a.g.l.

Town	Television			V.H.F. Sound		
	Field strength exceeded at stated percentage locations			Field strength exceeded at stated percentage locations		
	10%	50%	90%	10%	50%	90%
Ampt Hill	0.2	0.1	0.07	0.71	0.38	0.24
Baldock	0.15	0.1	0.05	1.3	0.79	0.45
Bassingbourn	0.18	0.13	0.1	0.71	0.47	0.31
Bedford		0.12		0.47	0.31	0.16
Biggleswade	0.35	0.2	0.15	1.7	1.1	0.56
Bletchley	0.08	0.05	0.03	0.25	0.12	0.07
Boston	0.18	0.11	0.06	1.0	0.6	0.37
Bourne	0.8	0.5	0.3	2.4	1.5	0.71
Burton Latimer	0.8	0.5	0.23			
Burwell				0.71	0.5	0.3
Cambridge	0.23	0.18	0.1	0.94	0.55	0.25
Chatteris	1.3	0.9	0.6	1.5	0.84	0.56
Clapham	0.14	0.09	0.06	0.47	0.25	0.13
Corby	1.6	1.0	0.7	4.7	3.0	1.7
Crowland	1.8	1.3	0.8	11.0	7.5	4.0
Daventry				0.42	0.24	0.14
Desborough	0.8	0.35	0.25	2.7	1.2	0.56
Downham Market	0.6	0.4	0.22	1.7	1.0	0.53
Eaton Socon	0.5	0.28	0.2	2.1	1.2	0.75
Elm	0.7	0.45	0.25	2.2	1.5	0.63
Ely	0.45	0.28	0.15	0.5	0.25	0.11
Eye	5.0	3.5	2.5	19.0	13.0	10.0
Feltwell				0.21	0.11	0.07
Finedon	0.6	0.4	0.23	2.4	1.3	0.79
Flitwick	0.17	0.1	0.07	0.67	0.35	0.21
Godmanchester	1.2	0.8	0.45	5.0	3.2	1.7
Gosberton	0.4	0.25	0.18	1.9	1.3	0.79
Grantham	0.07	0.05	0.03	0.3	0.12	0.04
Great Shelford	0.25	0.17	0.13	0.97	0.67	0.35

Town	Television			V.H.F. Sound		
	Field strength exceeded at stated percentage locations			Field strength exceeded at stated percentage locations		
	10%	50%	90%	10%	50%	90%
Heacham				0.37	0.2	0.12
Henlow	0.2	0.14	0.1	1.5	0.79	0.45
Higham Ferrers	0.6	0.4	0.2	2.5	1.5	1.0
Hitchin	0.12	0.07	0.04	0.79	0.42	0.21
Holbeach	0.4	0.28	0.25	2.1	1.4	0.94
Hunstanton				0.19	0.12	0.07
Huntingdon	1.0	0.6	0.35	4.2	2.5	1.5
Irthlingborough				4.5	1.9	1.2
Kempston	0.22	0.15	0.1	0.67	0.42	0.25
Kettering	1.0	0.45	0.23	3.2	1.5	0.5
Ketton	1.6	1.1	0.7		2.8	
King's Lynn	0.2	0.12	0.06	0.4	0.2	0.09
Kirton	0.23	0.18	0.14	1.4	1.0	0.67
Lakenheath	0.17	0.13	0.08			
Littleport	0.29	0.2	0.13	0.45	0.25	0.12
Long Sutton	0.4	0.25	0.14	1.9	0.94	0.63
March	1.0	0.8	0.6	2.4	1.5	1.0
Market Harborough	0.29	0.16	0.11	0.71	0.37	0.16
Melton Mowbray	0.16	0.08	0.05	0.4	0.18	0.09
Mildenhall	0.1	0.06	0.03	0.1	0.06	<0.04
Moulton	0.28	0.17	0.11	1.2	0.67	0.37
New Hunstanton				0.79	0.4	0.22
Newmarket	0.16	0.1	0.05	0.37	0.22	0.11
Newport Pagnell	0.08	0.05	0.03	0.32	0.16	0.08
Northampton				0.45	0.21	0.07
Oakham	0.7	0.45	0.25	2.4	1.0	0.63
Olney	0.1	0.07	0.05	0.19	0.12	0.07
Oundle	17.0	9.0	5.0	45.0	18.0	6.7
Peterborough	8.0	5.0	3.5	35.0	22.0	13.0
Pinchbeck	0.6	0.4	0.25	3.7	2.4	1.8
Potton	0.2	0.15	0.12	0.84	0.56	0.35

Town	Television			V.H.F. Sound		
	Field Strength exceeded at stated percentage locations			Field Strength exceeded at stated percentage locations		
	10%	50%	90%	10%	50%	90%
Raunds	0.8	0.4	0.2			
Rothwell	1.0	0.4	0.28	3.0	0.89	0.53
Royston	0.3	0.2	0.11	1.6	0.89	0.5
Rushden	0.7	0.3	0.15	2.8	1.0	0.4
Saffron Walden	0.3	0.11	0.04	1.0	0.45	0.16
St. Ives	0.8	0.6	0.35	2.7	1.8	1.1
St. Neots	0.5	0.35	0.23	3.0	1.8	1.0
Sandy	0.3	0.23	0.18	1.5	1.0	0.67
Sawston	0.2	0.15	0.1	0.75	0.45	0.27
Sleaford	0.17	0.1	0.06	0.42	0.27	0.12
Soham				0.25	0.19	0.12
Spalding	0.7	0.5	0.35	3.7	2.5	1.6
Stamford	3.0	1.6	0.8	13.0	6.3	2.5
Stevenage				0.42	0.27	0.17
Stony Stratford				0.24	0.11	0.06
Stotfold	0.2	0.15	0.13	1.2	1.0	0.79
Sutton Bridge	0.35	0.29	0.22		1.0	
Thorney	3.0	2.0	1.4	9.4	7.1	5.0
Toddington	0.4	0.16	0.1	1.4	0.4	0.25
Waterbeach				0.89	0.6	0.45
Wellingborough	0.5	0.3	0.15	1.9	0.84	0.35
Whaplode	0.5	0.4	0.29	3.0	2.4	1.7
Whittlesey	6.0	4.0	2.5	19.0	10.0	6.3
Wisbech	0.6	0.4	0.25	2.2	1.2	0.56
Wollaston	0.23	0.16	0.1	1.0	0.56	0.35